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# UNPROGRAMMED EFFECTS OF TRAINING HIGH-STATUS PEERS TO INTERACT WITH SEVERELY HANDICAPPED CHILDREN

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We examined the effects of a peer initiation intervention with high- and low-status nonhandicapped students on the behavior of untrained peers toward handicapped students. In the context of a counterbalanced withdrawal design, high- and low-status nonhandicapped students were taught to direct social initiations to eight severely handicapped students during recess activities. The interactions of the high-status students resulted in higher levels of initiations by untrained peers toward the handicapped students than did the interactions of the low-status students. Social response levels were also differentially affected by the status of the peer initiator.

DESCRIPTORS: peer initiation interventions, social interactions, status, untreated peers

The social interactions of peers with severely handicapped children have received a great deal of attention in the past 10 years. One of the most common techniques used to increase positive social interactions is the use of nonhandicapped peers as the behavior change agent (Hendrickson, Strain, Tremblay, & Shores, 1982; Ragland, Kerr, & Strain, 1978; Strain, Shores, & Timm, 1977; Young & Kerr, 1979).

An area that has received considerable attention is the effect of peer initiation programs on the behavior of untreated handicapped peers. Strain, Shores, and Kerr (1976) describe this process as "spillover effect," in which social behaviors of handicapped children increase as a result of observing target student interactions. A lack of this effect has been observed in children with severe handicaps (Ragland et al., 1978). Kazdin (1973) has suggested that a lack of spillover or modeling effect in severely handicapped individuals can be attributed to lower cognitive abilities. Modeling effect relies, in part, on the imitation of appropriate behavior by the observing children. Students with severe handicaps often fail to discriminate the desired behaviors. However, it may be reasonable to expect that spillover or modeling effects can be responsible for increased social initiations by nonhandicapped children who observe peer initiation interventions. Two factors that influence the probability that an imitative response will occur are the similarity of the models to the individuals who observe them (Bandura, 1968; Byrne & Griffitt, 1969) and the prestige or social status of the model (Bandura, Ross, & Ross, 1963; Mayer, Rohen, & Whitley, 1969). Thus, the purpose of this investigation was to determine if a peer initiation intervention using high- and low-status nonhandicapped children would affect the behavior of other nonhandicapped children present in the treatment environment. We also examined the effects of the intervention on the social behavior of the severely handicapped children.

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## METHOD

### *Participants and Setting*

The investigation was conducted 5 days a week over a period of 7 weeks during two daily recess periods on a public elementary school playground

common to handicapped and nonhandicapped students.

*Nonhandicapped subjects.* Five male and three female students from five regular elementary classrooms participated in the experiment. These students ranged in age from 7 to 10 years, and were from the first, second, and third grades. Participants were selected from a group of 117 students based on chronological age relation to the severely handicapped participants and the results of a sociometric rating to determine status.

One week prior to the initiation of the study, the social standing of all children in five classrooms was assessed using a peer nomination measure (Gresham, 1981; Oden & Asher, 1977) in which each student was asked to respond to three questions: (a) list three people in your class who are your best friends, (b) list three people in your class that really like you, and (c) list three people in your class that you'd like to play with best. The criterion for high-status appointment was nomination on the form by at least eight peers. Low-status participant determination was based on having been chosen three or fewer times by peers. The numbers of sociometric choices made for Subjects 1–4 (high status) were 10, 11, 9, and 9, respectively ($M$ = 9.7). Subjects 5–8 were nominated by their peers 3, 3, 1, and 2 times ($M$ = 2.2).

Based on the results of the status measure, first, second, and third grade students were divided into high and low social-status groups. Students from these groups were then pooled into age groups matching as closely as possible the ages of the severely handicapped participants. Finally, four high-status and four low-status nonhandicapped students were selected at random from these groups to participate in the experiment.

*Severely handicapped subjects.* Five male and three female students with severe handicaps also participated in the experiment. The children were assigned to one of two self-contained special education classrooms in the same school. The students ranged in age from 7 years 4 months to 11 years ($M$ = 9.2), and in IQ from 21 to 41 ($M$ = 30). Primary classifications were mental retardation, severe multiple handicaps, or autism. Behavioral characteristics included noncompliance, social withdrawal, and aggressive-disruptive behaviors. All but one student, who was verbal, used manual signs as the primary communication medium.

### *Design and Experimental Conditions*

The effects of the peer initiation intervention were evaluated in an A-B-A-C withdrawal design with counterbalancing of treatments across subjects (Kazdin, 1982). Handicapped Subjects 1–4 received the experimental sequence A-B-A-C while Subjects 5–8 were exposed to an A-C-A-B sequence.

*Baseline (A).* All participants (handicapped and nonhandicapped) attended recess sessions during the morning break. The participants were given no instruction during the 8 days of the baseline phase. Daily interaction measures began when all students entered the playground.

Following baseline observations, both high-status and low-status nonhandicapped subjects participated in a 1-hr training session conducted by the special education teacher to prepare them to act as peer initiators. The instruction, which took place in the severely handicapped students' classroom, included a brief discussion of individual differences, with a discussion of similarities between nonhandicapped and severely handicapped individuals; a description of the severely handicapped participants including name, communication medium, educational program, skill level, and personal likes and dislikes; a discussion of specific games and activities that the severely handicapped students enjoyed, culminating in the generation of a written list of these activities; a presentation of five manual signs that severely handicapped students knew or could produce, followed by modeled practice by nonhandicapped peers; and a discussion of several types of interactions (e.g., touching, eye contact) that had in the past been exhibited by the severely handicapped participants. A list of these interactions was developed by the classroom teachers prior to training.

*Treatment condition 1(B).* Each high- and low-

status nonhandicapped subject was paired with a severely handicapped participant and instructed to engage in play activities during the morning recess session. The pairs were provided with various play objects (e.g., ball and bat, basketball, jump rope) that were the choices of both handicapped and nonhandicapped subjects. The activities of the students were monitored by the classroom teachers. If the pairs separated at any time during recess, the teachers instructed the trained nonhandicapped peers to continue social contact. Following recess, feedback was provided to the nonhandicapped participants concerning additional play activities and games. In addition, any questions were answered at this time.

*Withdrawal 1(A).* Following 8 days of peer initiation pairs, the severely handicapped and nonhandicapped participants were instructed to discontinue the joint play activities on the playground. The nonhandicapped students were further instructed to play and interact with nonparticipant children.

*Treatment condition 2(C).* Each severely handicapped subject who had initially been paired with a high-status nonhandicapped participant was paired in this phase with a low-status partner, and vice versa.

### *Measurement*

Daily free-operant data were collected throughout the four conditions of the experiment during the 15-min morning recess sessions to assess the social interactions between the severely handicapped participants and nonhandicapped students. Observation sessions occurred during the first 10 min of the recess period. A 10-s observe, 5-s record interval sampling technique was used. Thus, each session resulted in 40 interval samples of interaction behavior for each subject.

Using a behavioral observation summary form, trained observers recorded interactions between the severely handicapped subjects and nonhandicapped students not involved in the intervention. The observers were the authors and two graduate research assistants, who each recorded the behavior of two severely handicapped students. The observers stood at least 20 feet from the target students and did not interact with the subject pairs during the observation sessions.

Using an observation system adapted from Sasso, Simpson, and Novak (1985) and Odom, Hoyson, Jamieson, and Strain (1985), the observers noted social initiations (the first social interaction occurring during any 10-s interval) and responses (a social interaction preceded in the previous 5 s by a social initiation from a peer to whom the response was directed); the student responsible for the interaction (handicapped student toward an untrained nonhandicapped peer or untrained nonhandicapped peer toward a handicapped student); whether the interaction was verbal (either vocal or within the established alternative communication medium) or physical (contact such as touching, hugs, hitting, or kicking); and if the interaction was positive (e.g., giving approval and attention, affection, overt evidence of acceptance, sharing) or negative (e.g., interference with an ongoing activity, derogatory remarks or gestures, noncompliance, physical aggression, crying). Only the first initiation and response during any 10-s interval were recorded. Therefore, each interval was independent with no carryover of coding between intervals.

Additional 5-min probes were conducted to assess the social initiation and response levels between trained nonhandicapped peers and severely handicapped students. These probes occurred a total of four times during the two treatment phases.

### *Reliability*

Two observers simultaneously recorded the social interactions of the severely handicapped students and their nonhandicapped peers during 25% of the sessions. There was a total of eight reliability observations of 5 min each across all subjects, evenly distributed across treatment conditions. Interobserver agreement was calculated on a point-by-point basis (Kazdin, 1982). Agreement was computed for the interval recording system by dividing the number of agreements by the number of agree-

ments plus disagreements and multiplying by 100. Point-by-point agreements for occurrence and nonoccurrence across all codes were: severely handicapped initiation, 93% and 95% (range, 75%–100%); nonhandicapped initiation, 94% and 95% (range, 80%–100%); verbal initiation, 84% and 87% (range, 70%–95%); physical initiation, 88% and 90% (range, 80%–100%); positive initiation, 90% and 93% (range, 85%–100%); negative initiation, 88% and 96% (range, 75%–100%); response, 89% and 89% (range, 80%–95%); verbal response, 82% and 88% (range, 70%–95%); physical response, 89% and 93% (range, 80%–100%); positive response, 80% and 82% (range, 70%–90%); and negative response, 89% and 91% (range, 80%–100%).

## RESULTS

### *Trained Peer Interactions*

Table 1 presents the number and type of social interactions directed toward the severely handicapped students by the nonhandicapped participants. These data reveal that both high- and low-status peers interacted with severely handicapped students at relatively high rates. The mean percentage of initiations across the four probes conducted on days 10, 14, 26, and 29 during the two treatment phases for high- and low-status students were 24.8% and 31.6%, respectively. Responses occurred at a mean percentage of 4.2% for high- and 2.4% for low-status students. Verbal initiation and response levels were consistently higher than physical interactions for both high- and low-status groups and across the two treatment phases.

### *Social Initiations*

The percentages of positive social initiations by untrained nonhandicapped students and handicapped participants for dyads 1–4 are presented in Figure 1. Handicapped Subject 4 dropped out of the experiment in the last phase due to family relocation. Baseline initiations were uniformly low for both nonhandicapped and handicapped students ($M$ = 2.1% and 2%, respectively). During high-status pairing, there were substantial increases in the positive social initiations of nonhandicapped students to an overall mean of 18.8%, and initiations of handicapped students rose to a mean of 11.1%. Removal of the nonhandicapped peer during the reversal phase resulted in a decline across all students to a mean of 2.3% for nonhandicapped student initiations and 2.1% for handicapped student initiations. In the final phase, low-status pairings produced nonhandicapped and handicapped student initiations for dyads 1–3 at a mean of 4.6% and 2.9%, respectively.

Figure 2 depicts the percentages of positive social initiations by untrained nonhandicapped and handicapped students for dyads 5–8. The percentages of positive initiations by nonhandicapped and handicapped students during baseline were at low, stable levels ($M$ = 1.8% and 1%, respectively). Pairing the handicapped students with low-status peers resulted in a mean percentage of initiations of 3.2% for nonhandicapped students and 2.3% for handicapped students. The reversal phase produced corresponding means of 1.6% and 0.6%. Finally, the high-status phase resulted in increased levels of positive initiations by nonhandicapped students to a mean of 16.3%. The increase in handicapped student initiations was more modest ($M$ = 3.8%).

Daily averages of the number of untrained nonhandicapped peers who initiated social interactions with the handicapped students were calculated to provide an approximation of the extent of spillover that occurred. For Handicapped Subjects 1–4 these averages were: baseline, 2 (range, 2–3); high-status, 9.6 (range, 5–14); reversal, 2.1 (range, 1–4); and low-status, 2.9 (range, 1–5). The mean number of initiators for Handicapped Subjects 5–8 were: baseline, 2.3 (range, 2–4); low-status, 2.4 (range, 1–4); reversal, 1.5 (range, 0–3); and high-status, 9.9 (range, 7–16).

Negative social initiations are not presented graphically because of the almost uniformly low levels of those behaviors. The mean percentage of

Table 1
Number, Percentage, and Proportion of Verbal and Physical Social Interactions by Trained Nonhandicapped Peers During the Two Treatment Phases

| Handicapped subject | Initiation | | | | | | Response | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Verbal | | | Physical | | | Verbal | | | Physical | | |
| | No. | % | Prop. | No. | % | Prop. | No. | % | Prop. | No. | % | Prop. |
| | | | | | | Treatment 1 | | | | | | |
| High-status | | | | | | | | | | | | |
| 1 | 14 | 35 | 63.6 | 8 | 20 | 36.4 | 7 | 17.5 | 87.5 | 1 | 2.5 | 12.5 |
| 2 | 9 | 22.5 | 52.9 | 8 | 20 | 47.1 | 4 | 10 | 66.6 | 2 | 5 | 33.3 |
| 3 | 13 | 32.5 | 68.4 | 6 | 15 | 31.6 | 1 | 2.5 | 100 | 0 | — | — |
| 4 | 11 | 27.5 | 55 | 9 | 22.5 | 45 | 2 | 5 | 40 | 3 | 7.5 | 60 |
| Low-status | | | | | | | | | | | | |
| 5 | 20 | 50 | 62.5 | 12 | 30 | 37.5 | 2 | 5 | 100 | 0 | — | — |
| 6 | 16 | 40 | 88.9 | 2 | 5 | 11.1 | 1 | 2.5 | 50 | 1 | 2.5 | 50 |
| 7 | 10 | 25 | 40 | 15 | 37.5 | 60 | 3 | 7.5 | 75 | 1 | 2.5 | 25 |
| 8 | 15 | 37.5 | 65.2 | 8 | 20 | 34.8 | 0 | — | — | 1 | 2.5 | 100 |
| | | | | | | Treatment 2 | | | | | | |
| High-status | | | | | | | | | | | | |
| 1 | 10 | 25 | 43.5 | 13 | 32.5 | 56.5 | 0 | — | — | 1 | 2.5 | 100 |
| 2 | 14 | 35 | 73.7 | 5 | 12.5 | 26.3 | 2 | 5 | 100 | 0 | — | — |
| 3 | 12 | 30 | 63.2 | 7 | 17.5 | 36.8 | 2 | 5 | 100 | 0 | — | — |
| 4 | 8 | 20 | 40 | 12 | 30 | 60 | 1 | 2.5 | 50 | 1 | 2.5 | 50 |
| Low-status | | | | | | | | | | | | |
| 5 | 19 | 47.5 | 65.5 | 10 | 25 | 34.5 | 0 | — | — | 0 | — | — |
| 6 | 12 | 30 | 50 | 12 | 30 | 50 | 1 | 2.5 | 100 | 0 | — | — |
| 7 | 16 | 40 | 64 | 9 | 22.5 | 36 | 2 | 5 | 66.7 | 1 | 2.5 | 33.3 |
| 8 | * | * | * | * | * | * | * | * | * | * | * | * |

* Severely handicapped subject dropped out during second treatment.

negative social initiations across phases was less than 0.4% for all subjects except Handicapped Subject 6. The mean percentages for this student across phases were: baseline, 4.9%; low-status, 10.8%; reversal, 2.4%; and high-status, 7.2%.

### *Response Proportions*

Figure 3 depicts the proportion, expressed in percentage, of positive responses to initiations by untrained nonhandicapped students and the handicapped participants. Baseline means for the handicapped students were 19.1% for Subjects 1–4 and 13.9% for Subjects 5–8. The mean response proportions of Subjects 1–4 for the high-status pairings, reversal, and low-status pairings were 48.2%, 46.5%, and 47%, respectively. The mean response proportions of Subjects 5–8 were 45%, 23.7%, and 48% for the low-status pairings, reversal, and high-status pairings.

The baseline percentage of nonhandicapped student response proportions to handicapped initiations was 17% for Subjects 1–4. During the high-status pairings for this group, there was an increase in proportion to a mean of 75.9%. When the high-status peer was removed during the third phase of the experiment, nonhandicapped student response proportions declined steadily to a mean of 30.8%. During low-status pairings for this group, there was an increase in response proportions to a mean of 45.5%.

For Subjects 5–8, the mean response proportion during baseline was 16.6%. Low-status pairings resulted in an increase to 36.7%. Responding was variable during the reversal phase, with a mean of

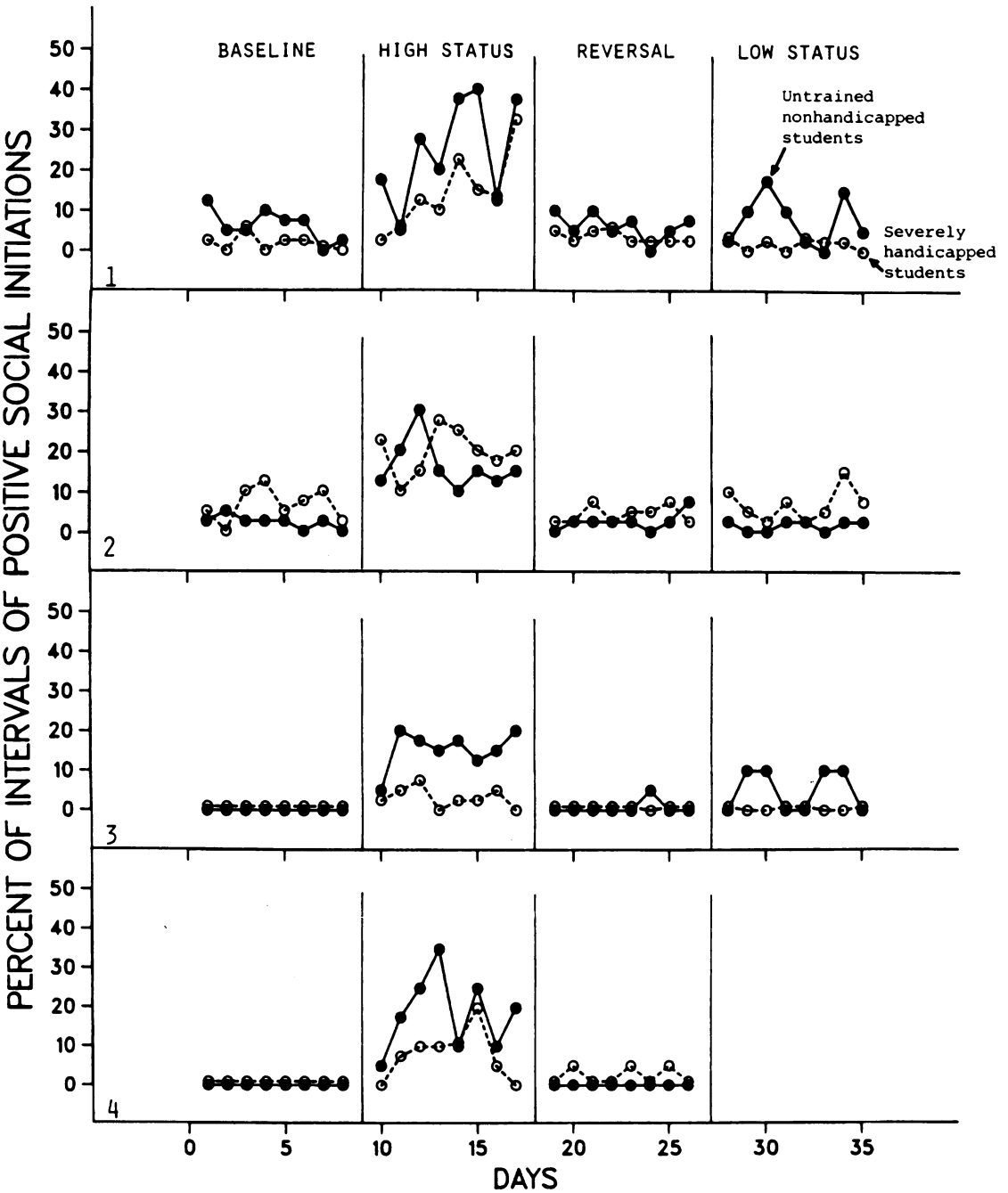


Figure 1. Percentage of observation intervals scored as positive social initiations across phases by severely handicapped and untrained nonhandicapped students for peer dyads 1–4.

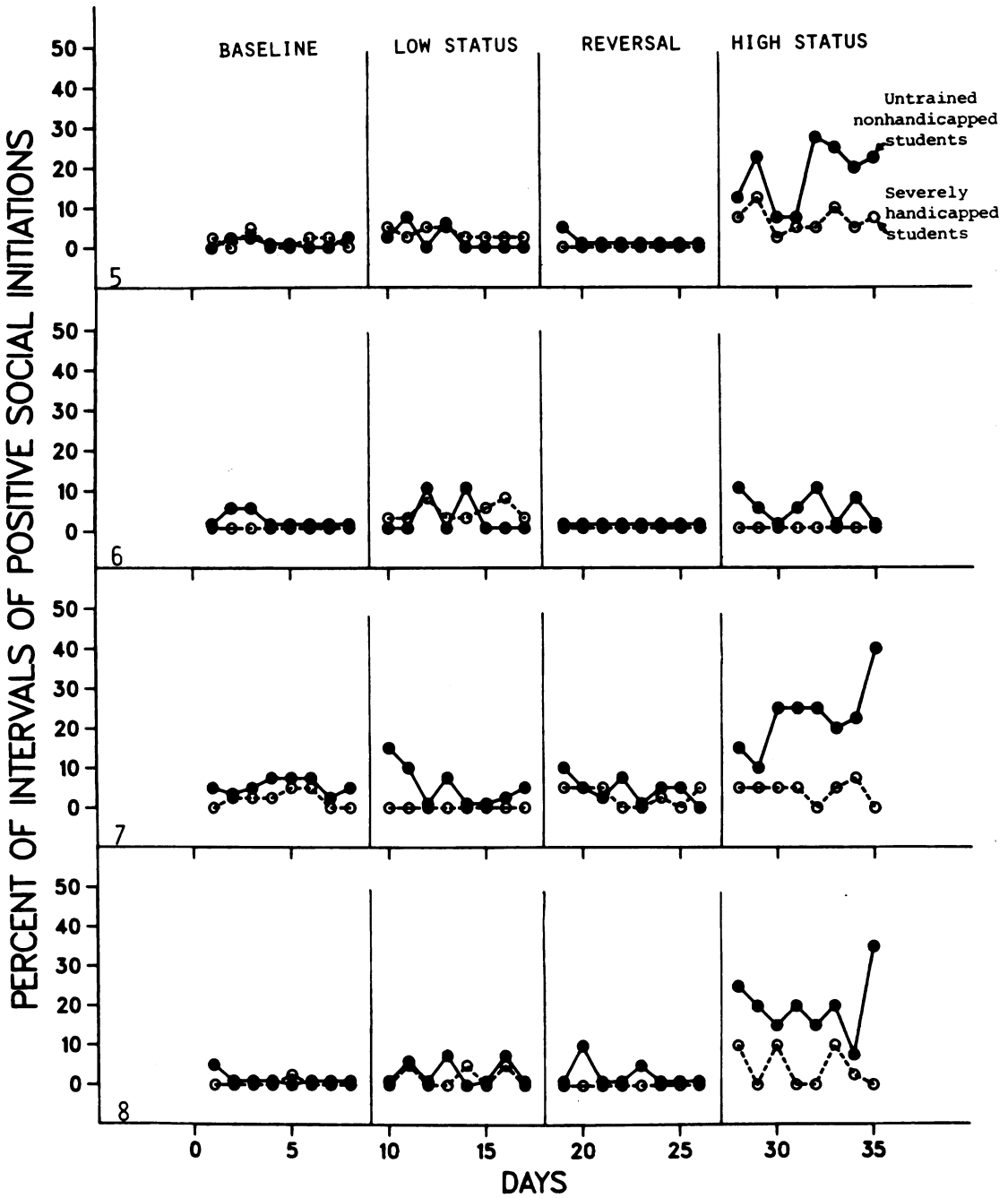


Figure 2. Percentage of observation intervals scored as positive social initiations across phases by severely handicapped and untrained nonhandicapped students for peer dyads 5–8.

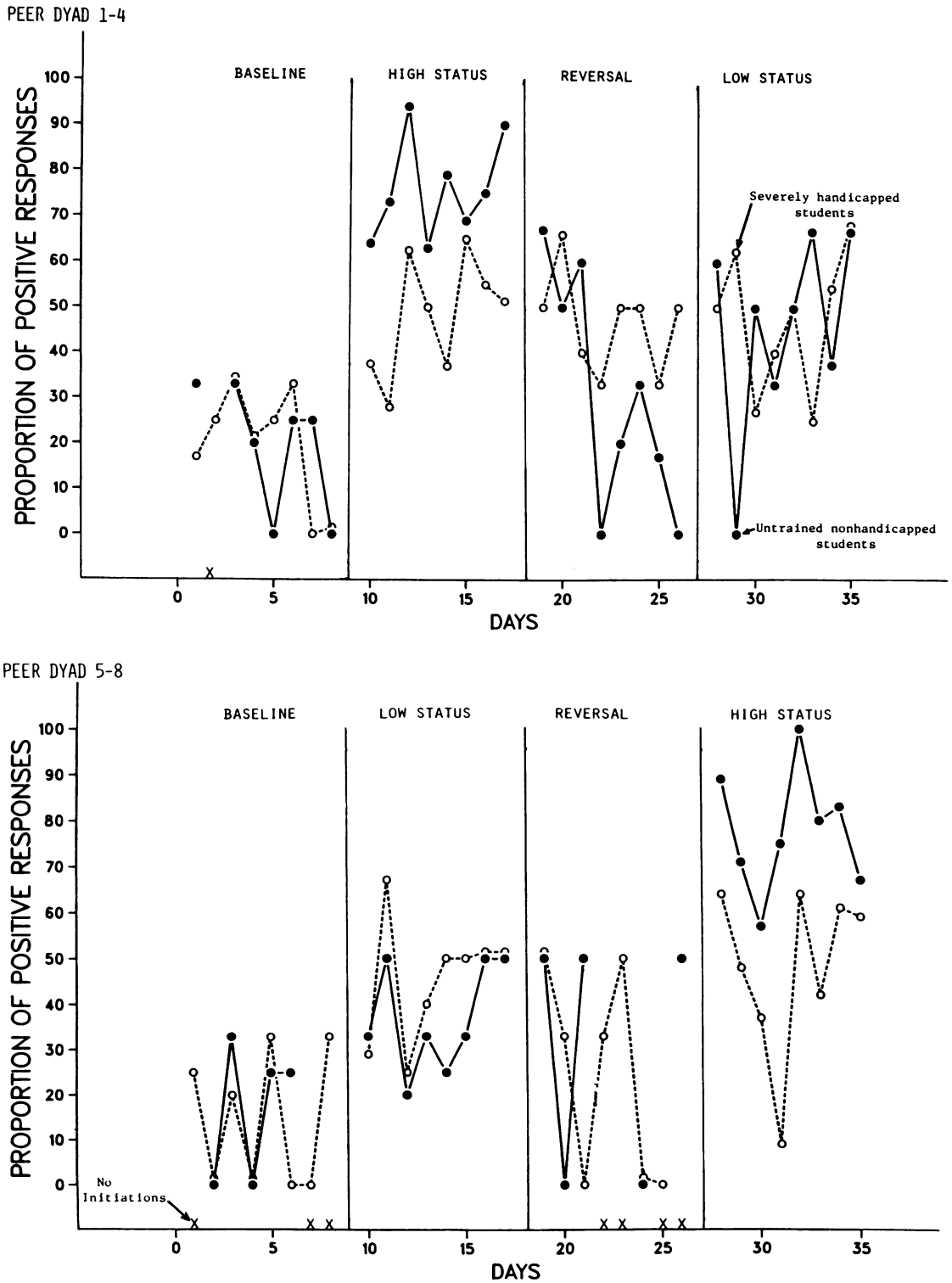


Figure 3. Mean percentage of positive social responses proportional to initiations for peer dyads 1–4 and 5–8.

30%. Following high-status pairings during the final phase for this group, response proportions increased substantially to a mean of 77.7%.

## DISCUSSION

Results indicate that the social status of peer initiators affected the initiation and response levels of the severely handicapped target students and other nonhandicapped children in the treatment environment. As Odom et al. (1985) and Strain (1983b) have suggested, the characteristics of participants in peer initiation programs can determine levels of positive social behavior. In this investigation, the characteristics associated with high sociometric acceptance were responsible for a "spillover effect" to nonhandicapped children in the treatment setting who were not direct recipients of the intervention.

Another issue related to generalization is the cross-setting effectiveness of peer initiation programs. The primary goal of these interventions is to increase the level of handicapped interactions by providing social bids from peers. Odom et al. (1985) found that strategies for programming generalization of treatment gains (i.e., introducing natural contingencies, programming common stimuli) did not produce cross-setting increases during a peer initiation intervention. They suggested that the use of proactive generalization-facilitating strategies such as multiple exemplars using multiple "confederates" be examined. In this study, high-status nonhandicapped peers were responsible for increased levels of initiations by other nonhandicapped students, which suggests that the use of high-status confederates may be an approach that provides multiple initiators. Future investigations may determine if this approach is effective in producing cross-setting increases in children's social interactions.

Concurrent increases in the level of positive social initiations were also observed for the severely handicapped children paired with high-status peers in dyads 1, 2, and 4. Although these increases did not occur for all subjects, our investigation supports in part other research (Strain, 1977, 1983a); that is, a peer initiation intervention, although it does not qualify as a skill-building procedure, sets the occasion for target subjects to display existing social skills through the provision of an increased number of social initiations.

Perhaps the most impressive finding was the increase in responses to initiations. Nonhandicapped children responded at higher percentages to initiations by severely handicapped children who were paired with high-status partners. These results support the interdependency hypothesis of Kazdin (1981), which suggests that the maintenance of a behavior may be facilitated by peers' reciprocal use and the immediate peer response to it. Odom et al. (1985) have stated that because peer initiation interventions rely on the reciprocal nature of social behavior, the most direct intervention effects would be on social responding. This notion was supported by our results. However, the use of an interval recording system as opposed to duration measures limits the conclusions that can be drawn concerning the effectiveness of this intervention in producing lengthy social interactions.

Another issue related to the success of peer initiation strategies is the effect of negative interactions. Perhaps because the severely handicapped subject participating in peer dyad 6 exhibited high frequencies of aggressive and disruptive behavior throughout the investigation, dyad 6 showed very modest gains compared to the other pairs. Strain (1983b) has noted that social acceptance cannot occur with even minimal levels of negative social behavior. Thus, if peer initiation strategies are to be effective, it may be necessary to first reduce the negative behaviors of severely handicapped participants.

Although it is clear that status did substantially affect the interactions of the untrained peers, it is not clear what characteristics associated with status were responsible for these differences. For example, it may be that high-status peer initiators prompt and/or reinforce nonhandicapped and handicapped peers' initiations and responses to each others' interactions. Alternatively, low-status children

may lack the social skills necessary to influence the behavior of their nonhandicapped peers.

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